



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/553,362

06/13/2007

Karl Brotzmann

16148.7.1

1221

22859 7590 12/05/2008  
INTELLECTUAL PROPERTY GROUP  
FREDRIKSON & BYRON, P.A.  
200 SOUTH SIXTH STREET  
SUITE 4000  
MINNEAPOLIS, MN 55402

EXAMINER

MCGUTHRY BANKS, TMA MICHELE

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

12/05/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/553,362	BROTZMANN, KARL	
	<b>Examiner</b>	<b>Art Unit</b>	
	TIMA M. MCGUTHRY-BANKS	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/14/05</u> .  | 6) <input type="checkbox"/> Other: ____.                          |

## **DETAILED ACTION**

### ***Status of Claims***

Claims 1 and 2 are as originally filed and Claims 3-13 are currently amended.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 11-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In Claim 11, it is not clear whether or not applicant intends to claim the velocities as listed in the parentheses. If applicant intends to claim these velocity ranges, then the parentheses should be removed.

Claim 12 recites the limitation "in phase 1" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 12 recites the limitation "in phase 2" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 13 recites the limitation "in phase 1" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 13 recites the limitation "in phase 2" in line 4. There is insufficient antecedent basis for this limitation in the claim.

***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Specification***

The disclosure is objected to because of the following informalities: applicant needs to identify a brief description of the drawings.

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Deloche et al (US 6,034,431).

Deloche et al anticipates the claimed invention. Deloche et al teaches a method for improving energy input in heating and melting of scrap bulk (abstract). The method includes burning a channel into scrap bulk with oxygen-containing gas (abstract). Fossil fuel are also added (column 2, lines 16 and 17). Additional energy is inputted for the heating and melting of the scrap bulk (Claim 1). Regarding the limitation of “hot blast,” this limitation can be read as

Art Unit: 1793

additional energy taught by Deloche et al. The channel is formed in the upper area (column 3, line 43), which reads on from the top. Regarding Claim 3, Deloche et al teaches two hot draft jets (column 4, lines 3 and 4). Regarding Claim 12, the oxygen is 30% (column 3, line 45) and fuel is added subsequently (line 48). Regarding no or hardly any oxygen enrichment, Deloche et al is silent with respect to this limitation, which therefore reads on the claim.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 2, 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deloche et al as applied to Claim 1 above.

Deloche et al discloses the invention substantially as claimed. Regarding Claim 2, Deloche et al does not disclose that the hot blast supply occurs centrally from the top. It would have been obvious to one of ordinary skill in the art at the time the invention was made to expect

Art Unit: 1793

that the supply in Deloche comes from the top, since Deloche et al teaches locating the nozzles anywhere, but they are preferably above the surface (column 3, lines 61-64). Regarding Claim 11, Deloche et al does not teach the blast velocities for the two phases. The exit velocity is 600 m/s (column 2, line 11). The reduction is at least 10-30% (column 3, line 17), which reads on 420-540 m/s. It would have been obvious to one of ordinary skill in the art at the time the invention was made that the claimed range is taught by Deloche et al, since in the case where the claimed ranges overlap or lie inside ranges disclosed by the prior art, a *prima facie* case of obviousness exists. See MPEP § 2144.05. Regarding Claim 13, Deloche et al does not teach the distance of the hot blast jet to the surface in phases 1 and 2. Deloche et al teaches at least 80 cm (0.08 m) (column 3, line 63). It would have been obvious to one of ordinary skill in the art at the time the invention was made that the claimed range is taught by Deloche et al, since in the case where the claimed ranges overlap or lie inside ranges disclosed by the prior art, a *prima facie* case of obviousness exists. See MPEP § 2144.05.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Deloche et al as applied to claim 1 above, and further in view of JP 01219116 A.

Deloche discloses the invention substantially as claimed. However, Deloche does not disclose distributing hot blast through a central jet with 35-65% of the total amount as claimed. JP '116 teaches a converter refining method. To enhance a secondary combustion ratio and to increase the compounding ratio of scrap by specifying the height position of a lance nozzle having main holes and auxiliary holes and specifying the angle of the oxygen jet to be flown through the auxiliary holes and the oxygen flow rate ratio thereof. The angle of the oxygen jet to be blown through the auxiliary holes 3 is specified to 30-60° with perpendicular and the oxygen

Art Unit: 1793

flow rate ratio through the auxiliary holes expressed by the equation (the total oxygen flow rate = the oxygen flow rate through the main holes + the oxygen flow rate through the auxiliary holes) is specified to 65-80% (abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made that the oxygen in the central jet in Deloche would be 20-35%, since JP '116 teaches enhancing a secondary combustion ratio and to increasing the compounding ratio of scrap

Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deloche et al as applied to claim 1 above, and further in view of Kundrat et al (US 5,702,502) and Hirai et al (US 4,334,921).

Deloche discloses the invention substantially as claimed. However, Deloche does not disclose supplying hot blast via a vertically adjustable lance as in Claim 5 or rotating around the vertical axis as in Claim 6. Kundrat et al teaches a lance used to inject jet oxygen gas (abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to inject oxygen gas with a lance, since using lances to inject oxygen gas in converters is well known as taught by Kundrat et al in column 1, lines 52-54, column 2, lines 18-21 and lines 37 and 38.

Hirai et al teaches a converter steelmaking process. The height of the oxygen blowing lance is controlled depending on the type of steel to be made and the flow rate of the bottom blown gas (column 12, lines 10-13). It would have been obvious to one of ordinary skill in the art at the time the invention was made to vertically adjust the lance or rotate the lance, since making a device adjustable is not a patentable advance, and Hirai et al teaches that the type of steel to be made is related to the height of the lance.

Art Unit: 1793

Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deloche et al as applied to claim 1 above, and further in view of Stercho (US 20020088102 A1).

Deloche discloses the invention substantially as claimed. However, Deloche does not disclose a hot heel as in Claim 7 or a hot heel of 10-30% as claimed. Stercho teaches that a maintaining a liquid metal heel in the furnace [0027]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to maintain the heel as taught by Stercho, since Stercho teaches that a liquid metal heel provides a substantial thermal benefit after tapping to maintain flat bath operation throughout the charging of scrap and/or other forms for charging material [0027].

Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deloche et al as applied to claim 1 above, and further in view of Hikosaka et al (US 4,908,059).

Deloche discloses the invention substantially as claimed. However, Deloche et al does not disclose injecting with bottom blowing tuyeres as in Claim 9 or the installation as in Claim 10. Hikosaka et al teaches melting cold iron material (title) such as scrap (abstract). Oxygen is injected via lower oxygen injection holes for combustion (column 5, line 9). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include bottom blowing tuyeres in the process of Deloche et al, since Hikosaka et al teaches that the sensible heat of the combustion gas is used to preheat the iron material phase in the furnace as it climbs therethrough (column 5, lines 10-14).



*Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TIMA M. MCGUTHRY-BANKS whose telephone number is (571)272-2744. The examiner can normally be reached on M-F 8:00 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/  
Supervisory Patent Examiner, Art Unit  
1793

/T. M. M./  
Examiner, Art Unit 1793  
5 December 2008